Innovative courses in E-Business Information Systems for SMEs

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This paper describes an innovative certificate and diploma in 'digital entrepreneurship' that addresses entrepreneurs' need for education in e-business information systems. We describe how we applied a range of concepts, including action learning and research, andragogy, blended learning, collaborative learning, constructivist learning, conversation theory and work-based reflective learning, to help entrepreneurs to transform their existing businesses by embedding information systems. The curriculum included personal development, a range of businesses topics, such as change and innovation management, as well as traditional IT related topics, such as rapid prototyping and project management. Formative assessment was via a sequence of mini-project reports, presentations and peer critiquing. Summative assessment was via a substantial report on a work-based project. The paper also discusses some percived educational and institutional barriers to implementing such courses and our recomendations for overcoming them

Keywords assessing critical thinking and reflection; blended learning; e-business; e-learning; SMEs;

1. Introduction

There is a strong requirement amongst entrepreneurs within Small and Medium Enterprises (SMEs) for education and training in the skills associated with embedding Information Systems (IS) within traditional business. At a European level this is reflected by activity in the Fifth European Community Framework Programme on *Promotion of innovation and encouragement of SME participatio*n [1]. To address this demand within the UK we have designed, directed, delivered and externally examined a Graduate Certificate and a Graduate Diploma in 'Digital Entrepreneurship'.

These courses have applied action learning and research to authentic work-based e-business projects. They were accredited by and delivered from City University's Department of Continuing Professional Development and built upon previous undergraduate level courses developed and externally examined by the authors. Personal development was core curriculum throughout both courses. The curriculum also included a range of businesses topics, such as change and innovation management, as well as traditional IT related topics, such as rapid prototyping and project management. Formative assessment was via a sequence of mini-project reports, presentations and peer critiquing. Summative assessment was via a substantial report on a work-based project where evidence of critical thinking and reflection were key assessment criteria.

Overall there were roughly equal numbers of male and female learners. The Certificate ran four times and the Diploma ran once. Together the courses reached over one hundred digital entrepreneurs over two years. Although non-completion rates were substantial, over 50% of entrepreneurs did complete, which was considered as a high success rate by the City University course board.

Educationally the courses were innovative because they brought action learning, andragogy, blended learning, constructivism, conversation theory, and work-based learning to mature learners who were motivated by business focused, practical and immediate outcomes. We suggest that this approach enables entrepreneurs to produce useful deliverables while developing learning skills that equip them to research new business opportunities and technologies.

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In this paper we first describe the demand for these courses. Next we introduce some of barriers to effective provision and describe how we overcame them. We then describe how we embedded our approaches to learning and teaching within the course structures.

2. Entrepreneurs' demand for skills in Information Systems

Much of the wealth created during the 'new economy' of the late 1990s was generated by start-ups—typically SMEs—rapidly bringing innovative Internet technologies to market [2, 3]. The baton of wealth generation has since passed back to entrepreneurs managing SMEs in more traditional sectors [4, 5].

To compete in increasingly hostile climates, entrepreneurs across these traditional sectors need to implement innovative yet realistic solutions that maximize productivity, broaden reach, manage customer relationships and control costs [6]. In larger firms such competitive advantage is often won by incorporating Information Systems (IS) for Customer Relationship Management (CRM), Enterprise Resource Planning (ERP) or Knowledge Management (KM). Our recent experience of intervening with entrepreneurs in SMEs indicates that, given appropriate support and training, implementing such technologies is becoming feasible for SMEs. For example, one learner recently use the course to upgraded a Chamber of Law's web site from an information source to an IS with full CRM capability. Another transformed an office leasing company into a provider of virtual office services by introducing call centre services using voice over IP integrated with an online KM system. On the basis of these projects, we believe that many entrepreneurs from traditional sectors would benefit from an intervention to raise their competencies in embedding sophisticated IS to transform their businesses.

3. Overcoing barriers to work-based learning

While entrepreneurs can benefit from an intervention to raise their competencies, in our experience, there are three potential barriers that need to be overcome: (1) entrepreneurs lack engagement with research-driven business schools, (2) entrepreneurs prefer shallow and extrinsic learning but require deeper intrinsic learning for long term survival and (3) traditional academia lacks understanding and support for work-based assessment.

We believe that these barriers can be overcome in two ways: (1) existing academic practice and policy needs to be re-engineered to enable practical work-based learning and (2) to deliver the re-engineered practice, blended learning with flexible assessment needs to be introduced and supported. In this section we discuss these barriers and ways to overcome them in more detail.

The first potential barrier is that while many entrepreneurs are aware of and will take advantage of subsidized education in this area [7], as van Aken [8] observes they are often unimpressed with the type of learning offered by many mainstream business schools [8]. This attitude can be explained via Gibbons *et al's* classification of two modes of knowledge production: mode-one knowledge is produced entirely within the academy and governed by its own codes and practices while mode-two knowledge is produced through active collaboration between academia and industry under a more commercially driven aegis [9].

Business schools typically produce mode-one knowledge, which entrepreneurs perceive as 'blue sky' or 'description driven' [8]. Production of mode-two knowledge on the other hand is driven by action research and tends to produce immediately applicable results. Indeed we have found that a mode-two educational environment is attractive to entrepreneurs. The problem is that many traditional business schools are funded by substantial government grants for academic research. Hence maintaining a mode-one environment is their core competency.

In the short term, this barrier can be overcome by either locating courses within a department that specializes in continuing professional development or in a business school that is already deeply committed to the mode two approach, e.g. ,Brighton Business School. Non-coincidentally, such departments and schools tend to be early adopters of the technologies that make part-time and work-based studies possible. In the longer term, we hope that this kind of practice will diffuse to more traditional departments and schools.

The second potential barrier is less immediately visible to the learners and more visible to the academics. Previously we had taught a number of undergraduate precursors to these course, which focused on the tutors transferring technology skills rather than the learners developing personal research skills [10]. During these undergraduate courses we observed that pressured entrepreneurs chose to engage in a good deal of shallow and extrinsic learning to generate immediate results. For long term survival we felt that they needed to engage in deep and intrinsic learning and thus develop strategic and transferable skills.

To overcome this barrier, we suggest that educators need to acknowledge and support the pressing need for shallow results while scaffolding a deeper and more reflective practice. In other words they need to interleave and motivate education within training.

Our third potential barrier is that summative assessment on academic courses often equates with unseen examinations. Traditionally, these neither acknowledge nor reward reflective practice. This is understandable because, as Bourner notes [11], reflective practice is often perceived as un-objective and hard to examine. Since innovators need to present courses and examinations for institutional accreditation, they need to grade work-based assessment with demonstrable academic rigor.

To overcome this barrier, we suggest that educators adopt Bourner's approach [11], which entailed re-categorizing reflective thinking as a variant of critical thinking. Learners can then be encouraged to provide evidence of critical thinking by answering reflective questions in their project reports. To support this approach, we believe it is vital that an external examiner is appointed who is familiar with work-based learning and an andragogic approach [12]. In effect the external examiner becomes a change agent on behalf of the institution.

4. Educational approach and course structures

Rospigliosi and Shurville developed, taught and directed the courses. They believe that best practice in adult learning and teaching is characterised by departing from the traditional passive, lecture-based and educator-centred approaches toward more active, learner-centred and generative modes. In such environments learners negotiate and construct knowledge and educators act as providers of learning experiences rather than content [13]. Scott was external examiner for the courses. He has researched learning and teaching since the late 1960s and was one of the founders of conversation theory [14]. He acted as a mentor-guide to Rospigliosi and Shurville and helped them to steer the courses further toward the androgogic goal. He brought sufficient gravitas to act as a change agent to validate the approach.

The food-web of concepts we applied included: action learning and research, andragogy, blended learning, collaborative learning, constructivist learning, conversation theory and work-based reflective learning. Following the tenets of learning design, we implemented these theories by creating a repeatable structure for each module containing a programme of group and individual learning and research activities. Within this programme the learners would negotiate specific deliverables with their action learning set and their tutors. The learners would then conduct their research and report it within presentations and project reports. These were peer critiqued and received formative assessment from the tutors.

Together, the Graduate Certificate and Diploma in Digital Entrepreneurship aimed to provide individuals with the knowledge, understanding and skills required to introduce e-business components to transform part of an existing SME. However, the Certificate and the Diploma could be taken separately. During the Certificate, students focused on researching and refining innovation plans and business proposals for their businesses. During the Diploma these plans were implemented via a substantial piece of action research [15] which transformed the participants' business.

The structure of the Certificate and the Diploma were almost identical (Table 1). The key difference was that in the Certificate the learners developed an innovation plan within and in the Diploma they implemented it through action research. Both development and implementation occurred in the context of an action learning set [16].

In line with the educational philosophy described above, the courses combined private study of core content with both face-to-face and online action learning. The contact time for each Certificate or Diploma was four days attendance at City University and an equivalent of 120 hours of private study.

Learners first met their cohort and tutors face-to-face at a workshop. This established familiarity within the cohorts and enabled the tutors to informally assess each learner's style and needs for content and personal development. Learners joined an action learning set at the workshop and were taught the principles of action learning by the tutors. During the set meeting the learners agreed goals for their initial research. This provided invaluable commitment and peer support for their independent learning. Action learning sets are established as a way to foster commitment to learning [16]. However, we believe their use in blended learning, with a VLE, remains innovative.

Table 1 The Structure of the Certificate and the Diploma.

Certificate modules	Diploma modules
Planning, reflection and evaluation: internet business transformation	Internet marketing: customer driven change
Collaborative learning: applying KM	Planning, reflection and evaluation: managing innovation and organizational change (double module)
Business research methods	

To implement an androgogic approach [12], the online learning materials within our blended learning environment focused upon personal development and broad business and technical content. Early materials, for example, focused on learning about professional development and reflective practice before moving onto technical themes. Learners individually chose to research contextually appropriate narrow content, i.e., information about particular technologies or products. Tutors and other learners also suggested external sources of narrow content as part collaborative learning projects. In this way the learners developed research skills to locate and evaluate specific knowledge and reporting skills as they reported their research to their action learning sets.

Following the tenets of conversation theory [14], learners were encouraged to construct their own business-contextualized meaning with support from their peers and tutors. The online materials always contained individual and group reflection points with spurs to discuss the outcomes on-and offline. The tutors developed on- and offline conversations around the learning materials to foster knowledge construction. This knowledge construction was evaluated via 'teach back' presentations made by the learners to the cohort and tutors. On the basis of these teach back sessions the tutors would suggest further research to be undertaken by the learners.

During each module, work-based reflective learning [17] was assured because the learners authored personal development plans, learning journals, project plans and other artifacts. These were peer-critiqued by members of the action learning sets and checked by the tutors to provide business-focused reality-checks.

The assessment was a mixture of radical 'critique and be critiqued' and traditional 'submit and mark'. Learners first delivered a presentation on their progress for each module. Next they placed this presentation online where it was peer critiqued. Passing a module required writing a minimum of two substantial peer critiques. Each assessment had broad guidelines about appropriateness and format with the details being negotiated between tutor and learner. Learners received formative feedback on each assignment before the assignments were resubmitted together in the form of a plan or research report. In the summative assessment the tutors utilized academic and business expertise to formally accredit the learners' construction of knowledge and their personal development.

6. Concluding remarks

The Certificate and Diploma have provided around a hundred entrepreneurs with access to education and training in both 'soft' and 'hard' skills associated with embedding IS in SMEs. The outcomes indicate that taking work experience into account to provide relatively open access to blended learning supported M-level courses is rewarded by ample evidence of critical thinking, personal reflection and business

transformation. In our experience, entrepreneurs can be highly motivated by an M-level qualification and will often produce reports of genuine work-based projects that surpass our assessment criteria. Our proposed avenue for future research is to revisit a sample of the entrepreneurs to assess the medium term impacts of their projects and personal development.

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